furnish any instances in point from the asylum under his charge, but cites an unpublished case communicated to him by Dr. Workman, of Toronto, which, however, does not justify the conclusion he draws. To deny having been in the asylum, and to refuse to recognize the officers whom he had previously known there, may have displayed the prisoner's cunning or sullenness, but cannot be regarded as a simulation of insanity. The general argument is well summed up by Dr. Ray (in the discussion). He says:—

> "Most of the insane know as well as other people that insanity is an excuse for crime, and there is no reason why they may not strive to use it as such where occasion calls, by feigning some manifestation of the disease over and above those belonging to their own particular form of the malady. To do this requires no more shrewdness and self-command than it does to conceal their delusions as they sometimes do. The fact that they are already insane does not preclude the need of simulation, for the well-known reason that the insane generally do not recognize their own infirmity. To them the need of the excuse seems just as strong and just as apparent as it would to others."

This is probably true, but Dr. Hughes's citation of cases in support of it can be regarded only as surmises.

We have not alluded to a number of interesting papers, including all of those presented in the Section on Ophthalmology, and this is simply due to want of space. Those which have been noticed are fair samples chosen almost at hazard, and we will conclude by saying that we have obtained much pleasure and instruction from this volume, and we predict that any one who will examine it carefully will be agreeably surprised.

J. S. B.

Art. XXI.—*The Ear; its Anatomy, Physiology, and Diseases. A Practical Treatise for the use of Medical Students and Practitioners.* By Charles H. Burnett, A.M., M.D., Aural Surgeon to the Presbyterian Hospital, etc. With eighty-seven illustrations. 8vo. pp. 616. Philadelphia: Henry C. Lea, 1877.

As one of the evidences of general growth in a special department of science, may be taken the demand for and production of the so-called text books as distinguished from publications of a more limited character, the text book being a work which shall serve both the purposes of systematic instruction and of occasional reference. To this class Dr. Burnett's treatise may be fairly said to belong, since its comprehensive character gives to the otological student the preliminary instruction which he seeks, and to the practitioner the latest contributions to the branch of medical science of which the book treats.

In his preface the author says that in view of the great advances which have been made of late years in otology, and of the increasing interest manifested in it, he has felt that the profession might welcome a new work, which should present clearly but concisely its present aspect, and should indicate the direction in which further researches can be most profitably carried on.

A detailed review of the work shows that this intention has been faithfully carried out, a due regard having been paid to the proportionate importance of the various subdivisions of the subject.

Part I., comprising one hundred and forty-three pages, is devoted exclusively to the anatomy and physiology of the ear, the remaining four hundred and sixty-three pages being devoted to pathology and therapeutics. By this arrangement a proper sequence is given to the course to be pursued by the student, the value of the work for occasional reference remaining the same.

Part I. falls naturally into three sections, treating respectively of the external, the middle, and the internal ear.

Chapter I. treats of the anatomy and physiology of the auricle, and under the latter heading interesting extracts are presented from the works of Darwin, Ludwig Meyer, J. Williams, Laycock, and others. The quotations on the subject of the comparative functions of the auricle, and the author's own observations on the resonant functions of this portion of the ear, are of particular interest, especially the demonstration of the fact that the auricle, in combination with the meatus auditorius, forms a resonator of a more or less conical shape, closed at the bottom by the membrana tympani, the special function of which is to strengthen by resonance those waves of sound which possess a short wave length, certain portions of the auricle resounding best to high partial tones, while other parts resound best to the intermediate and low partial tones, thus insuring the complete reception by the auditory nerve of all the partial tones which compose any given sound falling on the auricle.

Dr. Burnett has observed that the region of the helix and its fossa resound to the deeper notes, the anti-helix and its fossa to the intermediate notes, and that the concha resounds best to the high partial tones. The conclusions at which he arrives from his experiments are, that the concha is found superposed by nature upon the external auditory meatus, in order to lengthen it, and that the external ear, as a whole, forms a resonator for those tones having wave-lengths, the quarters of which are represented by the various depths of the column of air contained by the external ear. According to these observations, he considers it fair to suppose that the entire apparatus of the external ear in all animals is adapted to strengthening the sounds uttered by them and their species. The absence of a developed auricle in birds not being, in his opinion, an argument against its utility as a resonator in man, for the wave-lengths of the high notes, which the former must both use and hear as a means of intercourse with each other, are so short that they will resound perfectly well in the shallow auditory meatus found in them.

While according a well-merited space to the consideration of the functions of the auricle, the author has omitted to mention the subject of binaural audition, especially interesting in reference to the appreciation of the direction of the sound source, and which is treated of at length in a recent monograph by Prof. Steinhauser,[1] and in a report of experiments of a character similar to those of Prof. Steinhauser, made by Lord Rayleigh.[2]

Chapter II. treats of the anatomy and physiology of the external auditory canal. Concerning one function of the lining of the canal, the spontaneous removal of foreign bodies, the author quotes Voltolini's observations, and mentions also the fact of a progressive movement from within outward, strongly suggestive of the growth of the nail, the mechanism of this movement in the external auditory canal being as yet unexplained.

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[1] Anton Steinhauser. Die Theerie des Binauraben Horeus. Gerold's Solen, Wien, 1877.

[2] Rayleigh. Determination of the Direction of a Sound Source. Nature, 1876.

Chapter III., anatomy of the membrana tympani, gives, in addition to the usual description of its structure, the more recent investigations into the conditions which result in the peculiar form of the membrana, and in the production of that objective point which is so important a consideration in its bearing upon the diagnosis of affections of the membrana tympani and middle ear, the light reflex. This chapter also includes the author's investigations on the comparative distribution of bloodvessels in the membrana tympani, showing a peculiar arrangement of vascular loops in the dog, cat, goat, and rabbit, which is not found in man.

Under Section II., the middle ear, are included the tympanic cavity, the Eustachian tube, and the cavity of the mastoid.

A considerable portion of the first chapter is devoted to the anatomy and mechanism of the ossicles, and includes, taking the admirable experiments of Helmholz as the starting-point, the later experiments of Politzer, Urbantschitsch, Weber-Liel, Buck, and Burnett.

Chapter II., Eustachian tube and mastoid portion, gives prominence to the subject of the constant patulence of the normal Eustachian tube, a subject which has recently engaged the minute investigations especially of German otologists. The author inclines to the opinion held by Rüdinger and others, that there is a small part of the normal Eustachian tube, the so-called safety-tube in its upper part, under the cartilaginous hook, always wide enough open to allow a recoil of air to occur from the drum cavity if the drum-head is suddenly driven in, and also to permit a slow equalization of pressure in the tympanic cavity from the pharynx, independently of the act of swallowing; but this canal of safety is not wide enough to allow constant ventilation of the drum cavity to go on.

In Section III. thirty-five pages are devoted to the labyrinth and auditory nerve. The more or less elaborate monographs published, especially within the past ten years, having for their subjects the structure and functions of some part or the whole of this portion of the organ of hearing, afford valuable material which has been judiciously availed of for the compilation of the first chapter of this section. The illustrations to this chapter, without which the student would find difficulty in following any description of this complicated apparatus, are taken mainly from the works of Henlé, Waldeyer, and Rüdinger. The clearness of description is much increased by the progressive arrangement of the subdivisions chosen by the author, the subject unfolding itself in natural sequence, and affording a comprehensive idea of the structure of the labyrinth with the least labour to the student. Indeed, clearness and conciseness of description are characteristic of all of the anatomical portion of the work. The subdivision of this chapter on the function of the semicircular canals is a comprehensive review of the recent experiments of Boettcher, Cyon, Mach, Brewer, Curschmann, Löwenberg, and Bernhardt, to whom, as the author says, belong the honour of having conducted the most brilliant physiological experiments of modern times.

In Chapter II. a scheme of the relationship between the middle and internal ear is presented which serves as a sketch of the subject-matter of the preceding chapters, and tends to fix the more important points in the relation of the several parts more clearly in the mind of the student.

Part II. opens with a description of the various instruments and the methods of their employment in the examination of patients. Of the various forms of specula employed, preference is given to the oval speculum of Gruber as corresponding more nearly to the natural diameters of the auditory canal. The usual objections are urged against the employment of Kramer's bivalve speculum, which is recommended, however, as of use in anterior rhinoscopy. For the purpose of syringing the ear, decided objection is made to the ordinary hard rubber ear syringe on account of the danger of wounding the canal by pressure with the elongated tip. The ordinary hard rubber male syringe No. 2 is recommended in preference. A portion of this chapter is devoted to instructions in rhinoscopy, and especially the examination of the pharyngeal orifice of the Eustachian tube. This leads up to the description of the Eustachian catheter and its use, and proper stress is laid upon the importance of avoiding any risk of contagion by keeping an instrument for the especial use of each patient. This is followed by a concise description of the inflation of the middle ear by means of Politzer's air douche, preference being given to the original method of Politzer over the methods more recently suggested by Gruber and Lucae.

Chapter II. concludes the section on methods of examination with a thorough description of the means to be employed in testing the hearing, including directions for tests with the watch, tuning-fork, high musical tones, and the voice, especial attention being given to the acoustic character of vowel and consonant sounds as determined by the experiments of Wolf and Appunn.

For tests with the watch, a stop-watch is preferred, as affording a means of avoiding error on the part of the patient, the ticking of this form of watch being under control of the surgeon. The limits of value of the tuning-fork in tests of bone conduction, as more accurately determined by the experiments of Lucae, are given at length, and the value of tests by means of high musical tones in the differential diagnosis of diseases of the middle ear is recognized. In speaking of the test by means of the voice, allusion is made to the fact of the better hearing of low than of high tones, which the author explains by reference to his experiments on the mechanism of the ossicles, in which it has been shown that a deep note has the advantage of high notes in cases of increased labyrinthial pressure. In an increase of such pressure the stapes becomes more fixed, and it is on this small bone that the vibrations begin to grow less as the pressure within the labyrinth is increased. In such a case it is manifest that, if vibrations from without are normally conveyed to the stapes, there they must meet with hindrance in their endeavour to reach the labyrinth. Only the more powerful sound waves are able to overcome this obstacle, and force the stapes into to-and-fro-motions with the rest of the chain of ossicles. It might be asked, therefore, according to the author, whether the inability to hear high notes in some cases, while low notes are heard nearly, if not quite, normally, could not be construed into a sign that the stapes is impeded, either by undue pressure in the labyrinth, or by catarrhal fixation in the oval window. That the cause of such a peculiar alteration in hearing probably does not lie in an undue tension in the membrana tympani, appears from the well-known physical fact that the tense membrane is more susceptible to vibrations of high notes. In testing the hearing in cases of one-sided deafness, in addition to the tuning-fork test proposed by Knapp, the author employs the following method for a test with the voice :—

The affected ear being turned toward the speaker, and the opposite ear closed, the ordinary test with the voice is made, and the limit of hearing determined. Both ears are then closed, and the test repeated. If the closure of the deaf ear causes no change in the limit of perception, it is fair to conclude that whatever amount of hearing exists is not due to passage of sound through the external auditory canal of the worse ear turned toward the sound source.

If, however, stopping the deaf ear turned toward the examiner still further diminishes the hearing, the test should be repeated at decreasing distances until the limit of perception is again reached; this is the limit of hearing by conduction of sound through the cranial bones, the difference being the limit of aerial conduction by the external auditory canal.

Section II. describes firstly the organic defects of the auricle, including plurality, abnormal position, and malformations, and the rare form of arrested development resulting in congenital fistula of the ear. Cutaneous diseases of the ear follow next in order, among which may be mentioned the interesting case of a large horny growth from the upper and posterior part of the helix, reported by Dr. Buck, and a case of herpes zoster of the tragus observed by the author. The possible origin of the eruption is not mentioned, however, and in this connection an interesting comparison might be made with the case reported by Dr. Guerder,[1] in which the eruption was supposed to be the result of irritation of the chorda tympani.

Chapter II. treats of morbid growths, including cysts, angioma, vascular nævus maternus, fibrous tumours of the lobule, for removal of which the operation suggested by Knapp, a modification of the Mirault-Langenbeck operation for hare-lip is advised; an interesting case, in detail, of glandular hypertrophy, epithelial cancer, and othæmatoma.

Chapter I. of Section III. is devoted to circumscribed and diffuse inflammation of the external auditory canal. In the former affection, in addition to local applications, particular importance is attached to general treatment, a point which is too often overlooked in dealing with this slight but exceedingly troublesome affection. In diffuse inflammation much importance is properly attached to the examination of the condition of the middle ear, serious implication of this portion of the organ of hearing being much more frequent than would ordinarily be supposed, and too frequently overlooked until it forces itself upon the attention.

The rare diphtheritic form of diffuse external otitis unmentioned by many authorities is also described at length. In the early stages of simple diffuse inflammation, free scarification is recommended, followed by syringing with very warm water to promote bleeding. Moderately cool water would better answer the purpose, as very warm water is often found of use in controlling a copious bleeding. In addition to the several objections urged against the general use of poultices, the author adds one which is worthy of consideration, namely, the danger of implanting aspergillus.

Aspiration by means of Sigle's speculum is also recommended for the purpose of favoring the exudation of the fluids accumulating in the dermoid layer of the canal and membrana tympani.

For touching the small granulations which follow the more severe forms of diffuse inflammation, monochloroacetic acid is strongly recommended on account of the promptness of its action, its cleanness, and thoroughness.

The article on otomycosis reviews the numerous publications which preceded, and especially which followed, the comprehensive work of Wreden, together with an enumeration of the remedies advised, of which the author gives the preference to alcohol, either alone or diluted with water.

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[1] Annales des Maladies de L'Oreille et du Larynx. Mai, 1877.

For the removal of foreign bodies the use of other instruments than the syringe, unless absolutely necessary, is strongly deprecated, except in the exceedingly troublesome cases of indurated epithelium which follow desquamative inflammation of the canal.

Of the rare cases of foreign bodies impacted in the middle ear and Eustachian tube the three cases reported by Mayer[1] of foreign bodies in the Eustachian tube are quoted; the occurrence of foreign bodies in the tympanic cavity, in consequence of injudicious attempts at their removal from the meatus, are unfortunately much more frequent.

Among the results of inflammation and injury, which subject forms the third chapter, may be noted cholesteatomatous tumours, exostoses, and osseous closure of the canal, including a quotation of Dr. Buck's valuable paper on "ultimate forms of granulation tissue in the ear," and of Dr. Matthewson's successful application of the dental engine to the removal of osseous growths.

The occurrence of acute inflammation of the membrana tympani, as distinguished from inflammatory processes in its contiguous structures, is denied by many authors on the ground that this membrane is so intimate in its structural relations with the external and middle ear that disease originating in these parts may easily manifest itself, particularly in the membrana tympani. Nevertheless the localization of inflammation in either the dermoid or mucous coat of the membrana tympani is of sufficiently frequent occurrence to make it a matter of convenience to recognize such a condition as that to which the term acute myringitis is applied. Under this heading, in the first chapter of section four, the author gives a differential diagnosis between acute myringitis and acute otitis media, which is of practical value. In acute otitis media there is found early in the disease an indrawing of the membrana tympani without thickening, and the redness is limited to the manubrial plexus and the upper periphery. In acute myringitis, however, the membrane becomes first rough and evenly red all over, then thick and infiltrated, but not indrawn.

The pain in otitis media is much more severe than in acute myringitis. In otitis media the secretion is copious and may be either mucous or purulent; in acute myringitis it is scanty and purulent, in the former the febrile and constitutional symptoms are grave, in the latter such severe symptoms are wanting. This chapter further includes the subject of ulcerations of the dermoid layer of the membrana tympani, and of perforation of the membrana flaccida, including the report of five cases of this comparatively rare lesion, which came under the author's observation.

Section V., treating of the middle ear, comprises one hundred and ninety-three pages. Of this space eighty-six pages are devoted to the diagnosis and treatment of acute and chronic catarrh of the middle ear. In addition to the detailment of the symptoms which are made familiar by the prevalence of these affections, the author makes original observations which are worthy of note.

In speaking of the partial vacuum in the middle ear resulting from closure of the Eustachian tube attention is called to the fact of the occurrence of blood extravasation, which may serve to account for some of the rare cases of so-called otitis media hemorrhagica.

The symptom of ear cough has also been especially observed in connection with a slight swelling of the faucial orifice of the Eustachian tube during a head cold, the cough being induced by pressure upon the tragus.

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[1] Monatschrift für Ohrenheilkunde, IV., No. 1.

In his observations on the causation of tinnitus aurium the author accepts the vascular theory of Dr. Theobald, the substance of the latter's autograph being presented in extenso.

Under the head of double hearing two original cases are presented, one of differential audition, one ear being normal, and the other a case of sharping of all musical sounds during an attack of acute otitis media.

Well merited space is given to the subject of acute aural catarrh in children, an affection to which far too little attention is paid, since, even where it does not lead to more immediately serious manifestations of trouble, it may lay the foundation of a more persistent form of progressive disease, which shows itself later in life under conditions rendering it but little amenable to treatment.

In addition to the usually recorded symptoms accompanying chronic aural catarrh one peculiar symptom is mentioned; this is an odour unlike that of either true or false ozæna pervading the majority of patients in the mature stages of chronic aural catarrh, comparable to the odour of the saliva, and due, in the author's opinion, to a disordered condition of the follicles of the mucous membrane of the fauces, mouth, naso-pharynx, and nose. The author's observations on implication of the sympathetic and other nerves, published in Vol. IV., of the *Archives of Ophthalmology and Otology*, are also here reproduced.

Under treatment is included a detailed description of the use of the nasal douche, which is moreover recommended as a valuable adjunct to the treatment of this form of disease of the middle ear, the author never having seen a case of acute inflammation of the middle ear attributable to its use. With regard to the efficacy which is claimed for this means of cleansing the naso-pharyngeal space, there can be no question; with regard to its safety, however, as concerns the integrity of the middle ear there is much and well authorized rebutting testimony. Excision of the tonsils is regarded as rarely, if ever, necessary, for the relief of hardness of hearing or deafness, simply because the altered function of hearing is in no way dependent on the tonsillar enlargement. When associated with deafness, their enlargement is to be regarded simply as a symptom of a catarrhal condition, which has also brought about alteration in the glandular structures. Excision is worse than useless. This opinion agrees in the main with the observations of the late Wm. Harvey, of London, who, however, advocated the excision of the enlarged gland, on the ground that its persistence in the enlarged condition presented a larger surface for the perpetuation of the catarrhal disease in addition to the mechanical irritation to which it might give rise.

Of operative procedures upon the membrana tympani and within the middle ear, especial mention is made of the attempts to maintain a permanent opening in the drum-head and of the operation for tenotomy of the musculus tensor tympani. As concerns the latter, the author gives a full account of the practices and opinions of various writers who have accepted this operation as a valuable contribution to aural surgery, or have practised it for the purpose of testing its merits, withholding his own opinion on the just ground of a want of personal experience as to its efficacy. The application of electricity to the organ of hearing concludes the third chapter. In regard to the intra-tubal electrization of Weber-Liel, the improvement is considered to be due rather to the mechanical effect of the passage of the instrument, a silver wire used as a rheophore, through the Eustachian tube, than to any action of the electric current.

Under the heading, "Unusual Diseases of the Middle Ear," are included cases of objective snapping noises in the ear, due, according to Politzer and Lushka, to spasm in the palatal muscles whereby the anterior wall of the mouth of the Eustachian tube is suddenly drawn away from the posterior wall. This explanation of the peculiar symptom is substantiated by the author in the account of a peculiarly interesting case of the kind coming under his own observation. The extravasation of blood into the tympanum in Bright's disease, as observed by Schwartze and Buck, and the disease described by Roosa under the name otitis media hemorrhagica, are also noted.

The observations of Schütz on tubercular disease of the ear, and of Wendt on cholesteatoma are also accorded due recognition.

Under acute and chronic purulent inflammation of the middle ear, in describing the objective appearances accompanying the former, mention is made of a point of diagnostic value, namely that the presence of pus in the tympanum invariably causes bulging of the membrana tympani, while an equal amount of mucus usually does not produce a similar effect. This is accountable for by the fact that mucous accumulations are usually accompanied by a greater or less degree of thickening of the mucous coat of the membrana tympani, the resistance of the membrane being thereby increased. In the treatment of acute otitis media local depletion, or even if this should be for any reason impossible or insufficient, general bleeding is advised; the warm water douche has seemed in some instances to bring about a resolution of the inflammation, and paracentesis of the membrana tympani may be employed even before secretion in the tympanic cavity has appeared, with the result of relieving the congestion and tension of the parts. In the treatment of chronic purulent inflammation of the middle ear, while due regard is had to the influence of thorough and frequent syringing, the more heroic measure of forcing fluid through the Eustachian tube as recommended by Van Millingen and Hinton is deprecated. Cleanliness and perseverance are laid down as cardinal and effective virtues in the treatment of this often discouraging form of ear disease. Of astringents the preference is given to zinc, silver, and alum. The possible consequences of chronic purulent disease of the ear are given, as permanent deafness, epileptiform and other nervous manifestations, granulations and polypi, ulcerations of the tympanic mucous membrane with its possible train of periostitis, ostitis, caries, necrosis, and fatal implication of contiguous organs. Of the more common complication, granulations and polypi, the following classification is made: 1. Mucous polypi. 2. Fibromata. 3. Myxoma. 4. Angioma; the two latter varieties having been observed but once, myxoma by Steudener, and angioma by Buck.

For the removal of the more common growths, preference is given to the wire snare; and for subsequent application to the seat of the excised growths, nitrate of silver, chloro-acetic acid, and chromic acid are advised. Caustic potash, in some cases a valuable escharotic, is not included. In describing the symptoms and course of that always possible complication of purulent otitis media, mastoid disease, well merited reflections are made on the not uncommon neglect of observation of the symptoms which mark the local character of the trouble, and which, if promptly recognized, would lead to effective measures for the relief of what is often vaguely called a cerebral affection.

Diseases of the internal ear, to which Section VI. is devoted, include anomalies of formation, anæmia, hyperæmia and inflammation, traumatic injuries, the results of cerebro-spinal meningitis, and disease of the labyrinth in consequence of syphilis and typhoid fever; considerable space is also accorded to aural vertigo from chronic catarrh of the middle ear, and from secondary inflammation of the labyrinth.

The subjects of deaf-mutism, and of the relief and education of partially deaf children, form the seventh and last section of a work which is a valuable contribution to the otological library, because it presents in a readily available form the information which is the basis of the first study of the subject of which it treats, and also the most recent observations in anatomy, physiology, and therapeutics. The author's comprehensive knowledge of the literature of his special subject has enabled him to glean from a large mass of available material, at the same time enriching the work with his own original observations. C. J. B.

ART. XXII.—*Forensic Medicine and Toxicology.* By W. BATHURST WOODMAN, M.D., F.R.C.P., Assistant-Physician to the London Hospital, etc. etc., and CHARLES MEYMOTT TIDY, M.B., F.C.S., Professor of Chemistry and of Medical Jurisprudence and Public Health at the London Hospital, etc. etc. 8vo. pp. 1083. Philadelphia: Lindsay & Blakiston, 1877.

THE appearance of another large work from the press, with the above title, so soon after the recent publication of the new and enlarged editions of Dr. Taylor's *Principles and Practice*, and his *Manual of Medical Jurisprudence*, Prof. Guy's *Forensic Medicine*, and Wharton and Stillé's *Medical Jurisprudence*, certainly argues favourably for an increasing interest in, and an extended cultivation of this highly important branch of science—important alike to medicine and law. Hitherto, neither of these professions, at least in this country, seem to have fully realized the proper status which this subject should occupy in their respective departments. We need hardly remind the reader of the well-known fact, that in very few of our medical colleges does medical jurisprudence receive even a passing complimentary notice in the curriculum of study; and what is, perhaps, even more remarkable, in many of our law schools, it is either entirely ignored, or, as in the case of the Law Department of the University of Pennsylvania, while the *title* of this professorship appears among the others on the programme, the student is informed that attendance on the lectures of that branch is entirely optional, and that it is not required for his law degree! Of course, this affords but a very questionable encouragement to the student of law to interest himself in a branch of science, which is necessarily so interwoven with criminal law; and the consequence has been that our young lawyers, as a rule, avoid this department of their profession altogether, as a subject distasteful to them, from their ignorance both of its principles and practice. We may hope, however, that this prejudice on the part both of college authorities and students will soon be dispelled, and that they will be aroused to a proper appreciation of the true merits of the subject.

The work before us is the joint production of two gentlemen, who, from their hospital and professional connections in London, and from having